

TeX code compiled with `\documentclass{beamer}` using the Amsterdam theme.

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\begin{document} \begin{frame} Find the following limits, if they exist. \vskip 5pt \begin{itemize} \item[\bf a)]
 $\lim_{x \rightarrow \infty} \frac{7x^2 - x + 1}{3x^2 + 5x - 5}$  and  $\lim_{x \rightarrow \infty} \frac{7x^2 - x + 1}{3x^2 + 5x - 5}$ . \vskip 30pt \item[\bf b)]  $\lim_{x \rightarrow \infty} \frac{8x - 9}{2x + 4}$  and  $\lim_{x \rightarrow \infty} \frac{8x - 9}{2x + 4}$ . \vskip 30pt \item[\bf c)]  $\lim_{x \rightarrow \infty} \frac{x - 8}{x^2 + 7}$  and  $\lim_{x \rightarrow \infty} \frac{x - 8}{x^2 + 7}$ . \end{itemize} \end{frame} \begin{frame} Find the following limits, if they exist. \vskip 5pt
\begin{itemize} \item[\bf d)]  $\lim_{x \rightarrow \infty} \frac{\sqrt{4x^6 - x}}{x^3 + 3}$  and  $\lim_{x \rightarrow \infty} \frac{\sqrt{4x^6 - x}}{x^3 + 3}$ . \vskip 20pt \item[\bf e)]  $\lim_{x \rightarrow \infty} (\sqrt{25x^2 + x} - 5x)$  and  $\lim_{x \rightarrow \infty} (\sqrt{25x^2 + x} - 5x)$ . \vskip 20pt \item[\bf f)]  $\lim_{x \rightarrow \infty} (x + \sqrt{x^2 + 2x})$ 
\vskip 10pt \item[\bf g)]  $\lim_{x \rightarrow \infty} 6 \cos(x)$  \vskip 10pt \item[\bf h)]  $\lim_{x \rightarrow \infty} \frac{x^4 - 3x^2 + x}{x^3 - x + 3}$  \end{itemize} \end{frame} \begin{frame} Find the horizontal and vertical asymptotes of each curve. \begin{enumerate}[a)] \item  $y = \frac{8x + 3}{x - 4}$  \item  $y = \frac{x^2 + 1}{9x^2 - 80x - 9}$ 
\item  $y = \frac{x^2 - x}{x^2 - 8x + 7}$  \end{enumerate} \end{frame} \begin{frame} Let  $P$  and  $Q$  be polynomials with positive coefficients. \begin{enumerate}[a)] \item If the degree of  $P$  is less than the degree of  $Q$ , what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \item If the degree of  $P$  is greater than the degree of  $Q$ , what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \item If the degree of  $P$  equals the degree of  $Q$ , what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \end{enumerate} \end{frame} \begin{frame} A tank contains 120 L of pure water. Brine that contains 25 g of salt per liter of water is pumped into the tank at a rate of 25 L/min. \vskip 15pt
\begin{enumerate}[a)] \item Find the concentration of salt after  $t$  minutes (in grams per liter). \vskip 15pt \item As  $t$  approaches infinity, what does the concentration approach? \end{enumerate} \end{frame} \begin{frame} Find  $\lim_{x \rightarrow \infty} (\sqrt{x^2 + cx} - \sqrt{x^2 + dx})$ . (Here  $c$  and  $d$  represent arbitrary real numbers.) \vskip 25pt Find  $\lim_{x \rightarrow \infty} (x^2 + x^3)$ . \end{document}

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Last update: 2015/08/29 03:19

